

## Honors Algebra 2

Name

key

### Chapter 4A Assessment Review

State the degree, type and leading coefficient and constant term of the following polynomials. If there is none, write "none."

1.  $f(x) = 5x^2 - 4x^3$

Degree: cubic

Type: binomial

Lead Coefficient: -4

2.  $f(x) = -6$

Degree: constant

Type: monomial

Lead Coefficient: none

3.  $f(x) = 3x$

Degree: linear

Type: monomial

Lead Coefficient: 3

4.  $f(x) = x + 5x^4 - 6x^2 + 4$

Degree: quartic

Type: polynomial

Lead Coefficient: 5

Evaluate the function at the given value of  $x$ . Use your calculator and () !!

5.  $h(x) = -x^4 - 5x^3 + 2x - 2$

at  $x = -5$

-12

6.  $p(x) = 3x^3 - 6x^2 + 6x - 9$

at  $x = \frac{3}{2}$

-3.375 or  $-\frac{27}{8}$

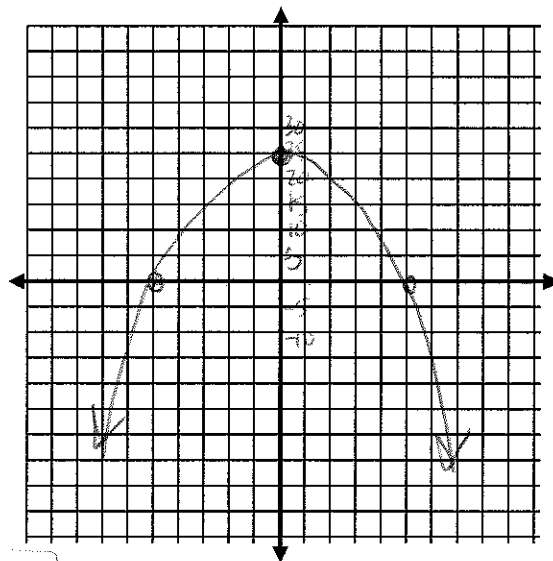
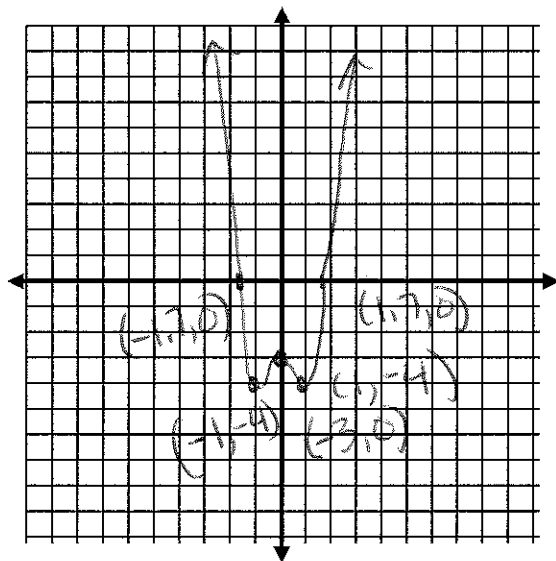
max, mins, zeros

Describe the end behavior of the following polynomials and graph. Make sure you label 4 points on the graph for full credit.

maxima  
minima

7.  $f(x) = x^4 - 2x^2 - 3$

8.  $f(x) = -x^2 + 25$



<u>Max</u>	<u>Mins</u>	<u>Zeros</u>	<u>End Behavior</u>
$(-3, 0)$	$(-1, -4)$	$(-1.7, 0)$	As $f(x) \rightarrow \infty$ as $x \rightarrow -\infty$
	$(1, -4)$	$(1.7, 0)$	As $f(x) \rightarrow \infty$ as $x \rightarrow \infty$

<u>Max</u>	<u>Min</u>	<u>Zeros</u>
$(0, 25)$	None	$(5, 0)$
		$(-5, 0)$

End Behavior  
 $f(x) \rightarrow -\infty$  as  $x \rightarrow -\infty$   
 $f(x) \rightarrow -\infty$  as  $x \rightarrow \infty$

Find the following sum/differences.

9.  $(x^5 - 3x^3 + 7x - 5) + (8x^4 - 3x^3 - 10x + 12)$

$x^5 + 8x^4 - 6x^3 - 3x + 7$

10.  $(5x^6 - 2x^4 - 5x^3 + x - 4) - (5x^5 - 12x^4 - x + 11)$

$5x^6 - 5x^5 + 10x^4 - 5x^3 + 2x - 15$

Find the product.

11.  $(3x-2)^2$

$$(3x-2)(3x-2)$$
$$9x^2 - 6x - 6x + 4$$

$$9x^2 - 12x + 4$$

12.  $(x+3)(5x^2+4x-6)$

$$5x^3 + 4x^2 - 6x + 15x^2 + 12x - 18$$

$$5x^3 + 19x^2 + 6x - 18$$

13.  $(x^2+6x-1)(5x^2-3x+2)$

$$5x^4 - 3x^3 + 2x^2 + 30x^3 - 18x^2 + 12x - 5x^2 + 3x - 2$$

$$5x^4 + 27x^3 - 21x^2 + 15x - 2$$

14.  $-2x^3(-x^2+5x-10)$

$$2x^5 - 10x^4 + 20x^3$$

15.  $(x-3)(x+1)(x+4)$

$$(x^2 - 2x - 3)(x+4)$$
$$x^3 + 4x^2 - 2x^2 - 8x - 3x - 12$$

$$x^3 + 2x^2 - 11x - 12$$

Divide using long division.

16.  $(x^3 - 19x + 12) \div (x^2 + 4x - 3)$

$x - 4$

~~$x^3 + 4x^2 - 3x$~~   

$$\begin{array}{r} x^2 + 4x - 3 \overline{) x^3 + 0x^2 - 19x + 12} \\ - x^3 + 4x^2 - 3x \\ \hline -4x^2 - 16x + 12 \\ - -4x^2 - 16x + 12 \\ \hline 0 \end{array}$$

17.  $(4x^4 - 2x^3 + x^2 - 5x + 8) \div (x^2 - 2x - 1)$

$4x^2 + 6x + 17 + \frac{35x + 25}{x^2 - 2x - 1}$

$$\begin{array}{r} 4x^2 + 6x + 17 \\ x^2 - 2x - 1 \overline{) 4x^4 - 2x^3 + x^2 - 5x + 8} \\ - 4x^4 + 8x^3 + 4x^2 \\ \hline 6x^3 + 5x^2 - 5x \\ - 6x^3 + 12x^2 + 6x \\ \hline 17x^2 + x + 8 \\ - 17x^2 + 34x - 17 \\ \hline 35x + 25 \end{array}$$

Divide using synthetic division.

18.  $(-2x^3 + 6x^2 + x - 2) \div (x - 3)$

$-2x^2 + 1 + \frac{1}{x - 3}$

$$\begin{array}{r|rrrr} 3 & -2 & 6 & 1 & -2 \\ & \downarrow & -6 & 0 & 3 \\ \hline & -2 & 0 & 1 & 1 \end{array}$$

19.  $(5x^3 + 22x^2 - 11x + 20) \div (x + 5)$

$5x^2 - 3x + 4$

$$\begin{array}{r|rrrr} -5 & 5 & 22 & -11 & 20 \\ & \downarrow & -25 & 15 & -10 \\ \hline & 5 & -3 & 4 & 10 \end{array}$$

Factor completely.

20.  $6x^4 - 486$

$6(x^4 - 81)$

$6(x^2 - 9)(x^2 + 9)$

$6(x - 3)(x + 3)(x^2 + 9)$

Change variable  
↓

21.  $z^3 + z^2 - 4z - 4$

$z^2(z + 1) - 4(z + 1)$

$(z + 1)(z^2 - 4)$

$(z + 1)(z - 2)(z + 2)$

22.  $3b^2 - 12b - 96$

$3(b^2 - 4b - 32)$

$3(b - 8)(b + 4)$